|  |  |  |
| --- | --- | --- |
| Page # | Name of Document | Absent Students –  PH page # or internet search topic |
| 79 | Unit F Evolution Title Page ***(Titled “Unit F: Evolution”), includes 2+ colored pictures that illustrate what we will be studying)*** |  |
| 80 | Table of Contents ***(this sheet)*** |  |
| 81 | Index Cards ***(1 blank page titled, “Index Cards”)*** |  |
| 82-83 | Key Concepts ***(2 blank pages all titled, “Key Concepts”)*** |  |
| 83-85 | Evolution Notes ***(not included in packet, leave blank)*** | N/A |
| 86-87 | Activity #89: Here Today, Gone Tomorrow ***(1 blank page)*** | “resurrecting extinct species” |
| 88-89 | Activity #90: Figuring Out Fossils ***(0 blank page)*** | Section 7-2 pgs. 236-237 |
| 90-93 | Activity #91: Fossilized Footprints ***(2 blank pages)*** | “Fossil footprints” |
| 94-95 | Activity #92: Time for Change ***(1 blank page)*** | Section 8-2 pgs. 272-273 and 276-277 |
| 96-98 | Activity #94: A Meeting of Minds **(2 blank pages)** | Section 7-1 pgs. 224-231 |
| 99-100 | Activity #95: Hiding in the Background (**1 *blank page)*** | “camouflage & natural selection” |
| 101-104 | Evolution Project **(Leave blank, passed out before project)** | N/A |
| 105-111 | Activity 96: Battling Beaks &  Activity 97: Origin of Species **(5 blank pages)** | “Competition & natural selection”  Section 7-3 pgs. 241-243 |
| 112-113 | Activity #99: A Whale of a Tail ***(1 blank page)*** | Section 7-2 pg 234-235 and  Section 7-5 pg 255-257 |
| 114-115 | Video: “What Darwin Never Knew” **(Leave blank)** | N/A |
| 116 | Unit F Crossword |  |
| 117 | Unit F Study Guide |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Back Cover of Notebook | Vocabulary *(staple to back cover on top of Unit D vocab)* |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Unit F: Evolution Table of Contents** | | | | | |
|  | My Table Group for Unit F | | | |  |
| Name (1st and Last) | | Phone # | Email |
|  | |  |  |
|  | |  |  |
|  | |  |  |
| 80 |  | | | |

**Activity #89 Here Today, Gone Tomorrow**

**Challenge Question:**

**Initial Thoughts:**

**Evidence:**

1. On page , outline the theory of how the dinosaurs were killed based on the explanation from page F-5. **Outline this theory in 5 steps.**

2. Where are they finding the bodies of mammoths?

3. Mammoths are close relatives of .

4. What do they need from the mammoth to bring it back from the dead?

5. What are the 2 reasons scientists believe that so many mammoths died off 10,000 years ago?

a. b.

6. Modern elephants did not evolve from mammoths, but they did both have a common

.

7. What are the 2 species of elephants? & , and which one is endangered? .

8. What 4 steps can be taken to intervene so that these elephants don’t become extinct?

1. 3.

2. 4.

**Analysis Questions:**

1.What are the similarities and differences between the extinction of mammoths and the possible extinction of Asian elephants?

3. Some scientists would like to try to recreate a living mammoth by removing the DNA from a fertilized elephant egg and replacing it with mammoth DNA.

a. Which species of elephant egg do you think scientists should try first? Explain. HINT: Look carefully at Figure 2.

b. Do you think scientists should try to recreate a living mammoth? Explain. (4 sentences)

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give examples from the reading to help explain your answer.

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**Activity #90 Figuring Out Fossils**

***Suggested Readings***

**Challenge Question:**

**Initial Thoughts:**

**Evidence:**

Fossil Name Drawing Qualitative Observations

Goniobasis

Knightia

Admetopsis

Ammonite

Alethopteris

Tabulophyllum

Mucrosprifer

Elrathi

1. Review your notes on the eight different types of fossils. Do you think any of them are from similar species? Explain, using evidence from this activity to support your answer.

2. Choose one of the eight fossils that you were given in this activity. What additional observations could you have made about the fossil if you had discovered it yourself?

3. Choose one of the eight fossils you examined.

a. Based on the fossil, describe what you think this organism looked like when it was alive. Include your evidence for your description.

b. In what type of environment would you expect to find this organism? Explain your reasoning.

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give example from the activity to help explain your answer.

**Activity #91 Fossilized Footprints**

**Challenge Question: Initial Thoughts: Evidence:**

|  |  |  |
| --- | --- | --- |
|  | **Observations:** | **Inferences:** |
| **Fossil**  **Footprint 1** |  |  |
| **Fossil**  **Footprint 2** |  |  |
| **Fossil**  **Footprint 3** |  |  |

1. Why is it important for scientists – and people in general – to distinguish between observations and inferences when they develop a hypothesis?

3. Different types of information can be collected from footprints. In addition to observing the shape, size, and arrangements of footprints, their depths can be measured. The tables below show two different sets of measurements that might have been taken.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1 Average Depths of Footprints (Scenario 1)** | | | |
|  | **Card 1** | **Card 2** | **Card 3** |
| **Larger Footprints** | 6.0 cm | 6.2 cm | 8.3 cm |
| **Smaller Footprints** | 2.5 cm | 2.6 cm | ------ |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 2 Average Depths of Footprints (Scenario 2)** | | | |
|  | **Card 1** | **Card 2** | **Card 3** |
| **Larger Footprints** | 6.0 cm | 6.2 cm | 6.1 cm |
| **Smaller Footprints** | 2.5 cm | 2.6 cm | ------ |

a. Which hypotheses would the data in Table 1 support? Explain how these data would provide more evidence in support of one or more hypothesis?

b. Which hypotheses would the data in Table 2 support? Explain how these data would provide more evidence in support of one or more hypothesis?

c. What factors might explain the difference in depth of the footprints in the different sections?

4a. Think back to an activity in which you came up with hypotheses based upon evidence. What was the Activity # and Title?

What did you do?

What was your hypothesis?

4b. Describe an example of an observation and an inference based upon that observation and explain how the two are different.

-Observation:

-Inference:

-How are they different?

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give examples from the activity to help explain your answer.

Activity #91 Page 2 of 2 91

**Activity #92 Time For Change**

**Challenge Question: Initial Thoughts:**

**Evidence:**

**Part One: Personal Time Scale**

Most

Recent

Most

Distant

|  |  |  |
| --- | --- | --- |
| **Order of Events** | **Number of Years Ago** | **Name** |
|  |  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
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|  |  |

***Suggested PH Readings***

**Part 2: Geologic Time**

|  |  |  |  |
| --- | --- | --- | --- |
| **Geologic Name** | **Time Span(mya)** | **Length of this time span (my)** | **Length of this time span on timeline (cm)** |
| **Early Pre-Cambrian**  **(Time Card )** | 4500-3800 |  |  |
| **Late Pre-Cambrian ( )** | 3800-550 |  |  |
| **Early Paleozoic ( )** | 550-408 |  |  |
| **Late Paleozoic ( )** | 408-245 |  |  |
| **Mesozoic ( )** | 245-65 |  |  |
| **Cenozoic ( )** | 65-0 |  |  |

**\*Fold your timeline so that you can staple it to the following page and easily be able to open it and see the entire timeline without having to rip it from the staple.**

**Analysis Questions:**

1. Think back to how you and your classmates divided your personal time scales into periods. How do you think scientists determined how to divide geologic time into its periods?

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give examples from the activity to help explain your answer.

**Activity #94 A Meeting of Minds**

**Challenge Question:**

**Initial Thoughts:**

**Evidence:**

How did giraffes

get their long necks?

Lamarck Darwin

Why did giraffes need long necks?

What determines what type of neck a giraffe baby is born with?

Can a giraffe grow a longer neck?

What was the theory called?

Did they believe all the giraffes started with the same length necks?

Did they believe there

was variety (some long necks and some shorter necks) in the populations?

Did they believe in

Survival of the Fittest?

(the best adapted survive)

Does it take a long time to evolve and adapt?

Was his theory accepted?

**Analysis Questions:**

**1.** Why do scientists find Darwin’s theory more convincing?

**2.** Ancestors of modern elephants had much shorter trunks than elephants do today. Use **Lamarck’s**

theory of evolution to explain how the trunks of elephants might get longer over many generations. Draw

4 boxes (larger than the ones below) and draw a series of pictures **and captions** in each box to explain your ideas.

**3.** Use the **Darwin/Wallace** theory of natural selection to explain how the trunks of elephants might get longer over many generations. Draw 4 boxes (larger than the ones above) and draw a series of pictures **and captions** in each box to explain your ideas.

**4.** 4. Compare and contrast Lamarck’s and Darwin’s theories of evolution: What are the similarities? What are the differences? **(Complete this question by filling in a larger version of the Venn Diagram below)**

Lamarck Darwin

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give examples from the reading to help explain your answer.

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Activity #94 Page 1 of 1

|  |  |  |  |
| --- | --- | --- | --- |
|  | Generation 1 | Generation 2 | Generation 3 |
| 1. Initial Beige Worm Population | 25 |  |  |
| 2. Number of Beige Worms Eaten  (Collected from the ground) |  |  |  |
| 3. Number of Beige Worms Surviving  (subtract Row 2 from Row 1) |  |  |  |
| 4. Number of Beige Offspring Worms  (four times the value in Row 3) |  |  |  |
| 5. Final Beige Worm Population  (add Rows 3 and 4) |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Generation 1 | Generation 2 | Generation 3 |
| 1. Initial Green Worm Population | 25 |  |  |
| 2. Number of Green Worms Eaten  (Collected from the ground) |  |  |  |
| 3. Number of Green Worms Surviving  (subtract Row 2 from Row 1) |  |  |  |
| 4. Number of Green Offspring Worms  (four times the value in Row 3) |  |  |  |
| 5. Final Green Worm Population  (add Rows 3 and 4) |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity #95: Hiding in the Background**  **Challenge Question: Initial Thoughts:**  **Evidence: Worm Populations**  Table 1: Green Worm Population  Table 2: Beige Worm Population | | | | |
|  | **Analysis Questions:**  1.a. Determine the ratio of green to beige worms in each generation. For example, the ratio of green to beige worms in Generation 1 is 25:25 or 1:1.  b. Describe how the ratio of green to beige worms changed over the three generations. c. Why do you think this change occurred? Explain.  3. Due to a drought, grass begins to dry out and die, leaving only dead grass stalks. What is likely to happen to the ratio of green to beige worms? Explain.  4. a. In this activity, what effect did the  **environment** have on the process of natural selection?  b. In this activity, what role did the  **predator (bird)** have in the process of natural selection?  5. Why do you think earthworms are beige and not green?  **Summary:**  1. Answer the challenge question again, make sure it is a new or expanded answer. | | |  |
| 2. Give data from the lab to help explain your answer. | | 99 |
|  | Activity #95 Page 1 of 1 | |

**Activity #96 Battling Beaks**

**Challenge Question:**

**Initial Thoughts:**

**Prediction:**

**Evidence:**

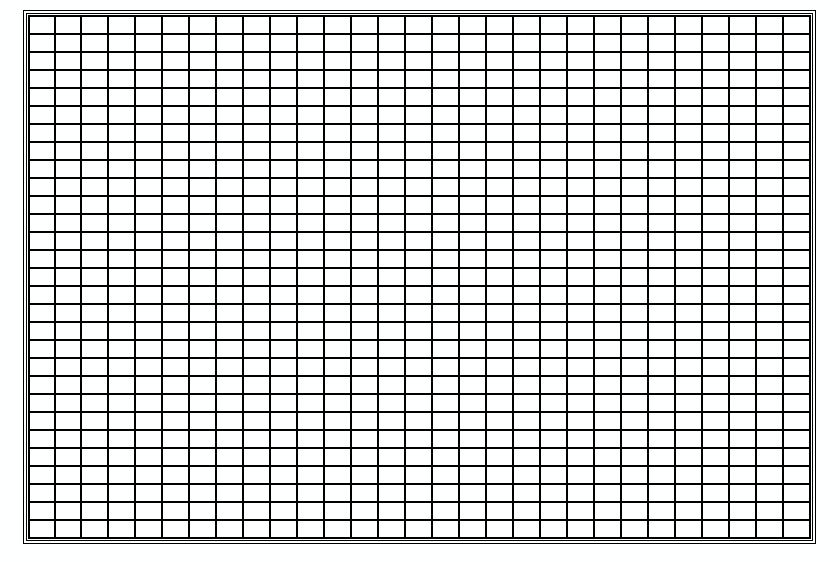
**Notes on “Factors that can influence Evolution” on page Table 1: Group Forkbird Population Data**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1-Tined Forkbirds** | **2-Tined Forkbirds** | **4-Tined Forkbirds** |
| **Initial** |  |  |  |
| **1** |  |  |  |
| **2** |  |  |  |
| **3** |  |  |  |
| **4** |  |  |  |
| **5** |  |  |  |
| **6** |  |  |  |
| **7** |  |  |  |
| **8** |  |  |  |

**Table 2: Class Forkbird Population Data**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1-Tined Forkbirds** | **2-Tined Forkbirds** | **4-Tined Forkbirds** |
| **Initial** |  |  |  |
| **1** |  |  |  |
| **2** |  |  |  |
| **3** |  |  |  |
| **4** |  |  |  |
| **5** |  |  |  |
| **6** |  |  |  |
| **7** |  |  |  |
| **8** |  |  |  |

**Graph: Class Forkbird Population (Line Graph)**



Number of Forkbirds

**Key:**

1-tined forkbirds =

2-tined forkbirds=

4-tined forkbirds=

Activity #96 and 97 Page 1 of 2

Generations

105

|  |  |  |
| --- | --- | --- |
| **Analysis Questions:**  1. Which type of Forkbird can you conclude was the most successful? Explain how the class data support this conclusion.  2a. Look at your graph of the class results. Describe what happened to the number of each type of Forkbird over many generations. 1-tined…. 2-tined…. 4-tined….  b. In the Forkbird model, mutations at reproduction were much more common that they are in real life. Imagine that the number of mutations was lowered, so that the vast majority of offspring had beaks similar to those of their parents. Predict what you think would have happened to the number of each type of Forkbird in future generations.  3. How did the Forkbird activity simulate the process of natural selection? Explain.  **(6 or more sentences)** Include the following words in your answer: **mutation, competition, variation, and reproduction**.  4. The Forkbird that you studied are a single species. Although they look slightly different, they are part of a single interbreeding population. Imagine that a change in the food supply occurred.  a. As a result of heavy rains, the major source of Forkbird food is now soft berries, like blueberries. After many, many generations, would you expect a new type or types of forkbird to evolve? What would their beaks look like? Explain your reasoning.  b. As a result of a drought, the major source of Forkbird food is now sunflower seeds. After many, many generations, would you expect a new type or types of forkbird to evolve? What would their beaks look like? Explain your reasoning.  c. As a result of deforestation & urbanization of the forkbirds environment, describe another way the forkbirds might evolve.  Summary  1. Answer the challenge question again, make sure it is a new or expanded answer.  2. Give data from the lab to help explain your answer.  **Activity #97 Origin of Species**  **Challenge Question:**  **Initial Thoughts:** | | |
|  | **Evidence**:  **STT Answers See page .**  **From Video #1: Darwin’s Dangerous Idea**  Prompt #1: Describe the type of person the Charles Darwin appears to be. Prompt #2: How is it that Darwin found marine animal remains in a mountain?  Prompt #3: What impression do you get in terms of the academic community’s feelings toward Darwin’s ideas? Prompt #4: According to Darwin, why should different finches inhabit different islands if all the Galapagos islands are identical in climate and geology?  Prompt #5: What do the biologists in the video hope to explore while capturing and comparing two groups of different animals in the forests of South America?  Prompt #6: Why does Darwin’s theory depend so much on the idea of the earth being very old?  **Analysis Questions:**  1. Are mutations always helpful? Explain.  2. How can mutations enable the evolution of a new species to occur? **Use the story of the cichlids to help you explain your ideas.**  3. Under ideal conditions, bacteria have a generation time of about 20 minutes. Humans have a generation time of  about 20 years. Which would you expect to evolve faster? Why?  **Summary:**  1. Answer the challenge question again, make sure it is a new or expanded answer.  2. Give examples from the reading and/or video to help explain your answer. | |
| 106 | Activity #96 and 97 Page 2 of 2 |
|  | |
|  | | |

**Activity #99: A Whale of a Tale**

**Challenge Question:**

**Initial Thoughts:**

**Evidence: Comparing Skeletons**

|  |  |  |
| --- | --- | --- |
|  | Similarities | Differences |
| Group 1 Skeletons  A, |  |  |
| Group 2 Skeletons |  |  |
| Group 1 Skeletons compared to  Group 2 Skeletons |  |  |

**Analysis Questions:**

1.a. What kinds of skeletal changes appear to have occurred during the evolution of whales?

b. What can you infer about the changes in habitat that occurred at the same time as these skeletal changes?

2. Use natural selection to explain how these changes could have occurred.

**Summary:**

1. Answer the challenge question again, make sure it is a new or expanded answer.

2. Give examples from the activity to help explain your answer.

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Activity #99 Page 1 of 1

|  |  |  |
| --- | --- | --- |
| **Unit F Vocabulary** | | |
| **WORD**  & Descriptive, detailed & COLORED **drawing** explaining the word’s definition. | *-Handwritten-*  **DEFINITION**  (from the SALI book, Prentice Hall textbook, or teacher’s website) | Give an **example** of the word in a thoughtful sentence. If an example does not apply, write a thoughtful sentence using the vocabulary word in context (showing that you know its definition). |
| 89 extinct |  |  |
| 89 endangered species |  |  |
| 90 fossil |  |  |
| 90 species |  |  |
| 91 paleontologist |  |  |
| 92 geological time scale |  |  |
| 93 law of superposition  1 of 2 |  |  |

|  |  |  |
| --- | --- | --- |
| 93 stratigraphic column |  |  |
| 94 evolution |  |  |
| 94 natural selection |  |  |
| 94 variation |  |  |
| 94 adaptation |  |  |
| 96 competition |  |  |
| 97 mutation  (when are they good?) |  |  |
| 98 fossil record  2 of 2 |  |  |